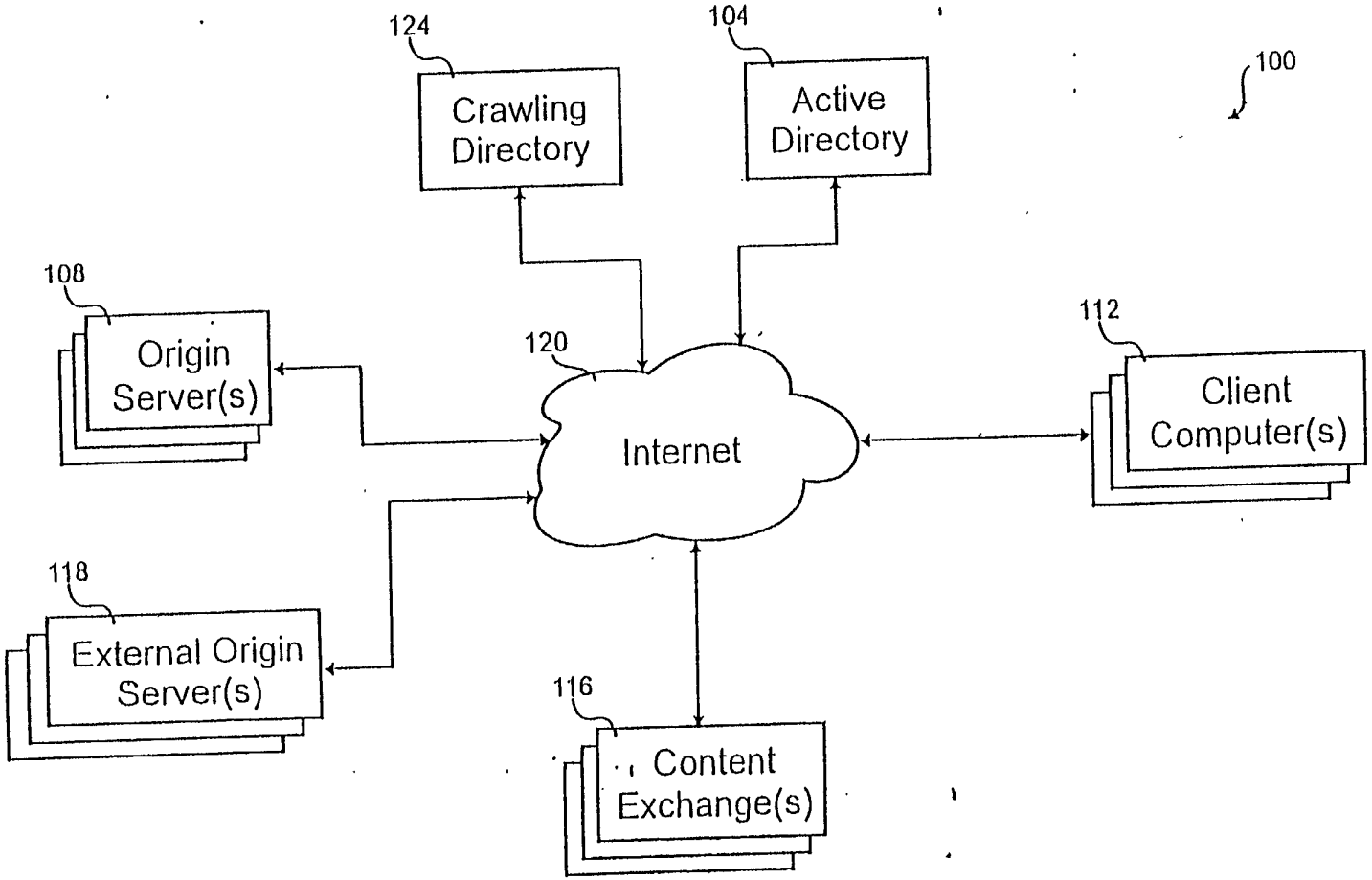
124
Crawling Directory
104
Active Directory
100
108
Origin Server(s)
120
Internet
112
Client Computer(s)
118
External Origin Server(s)
116
Content Exchange(s)

Fig. 1

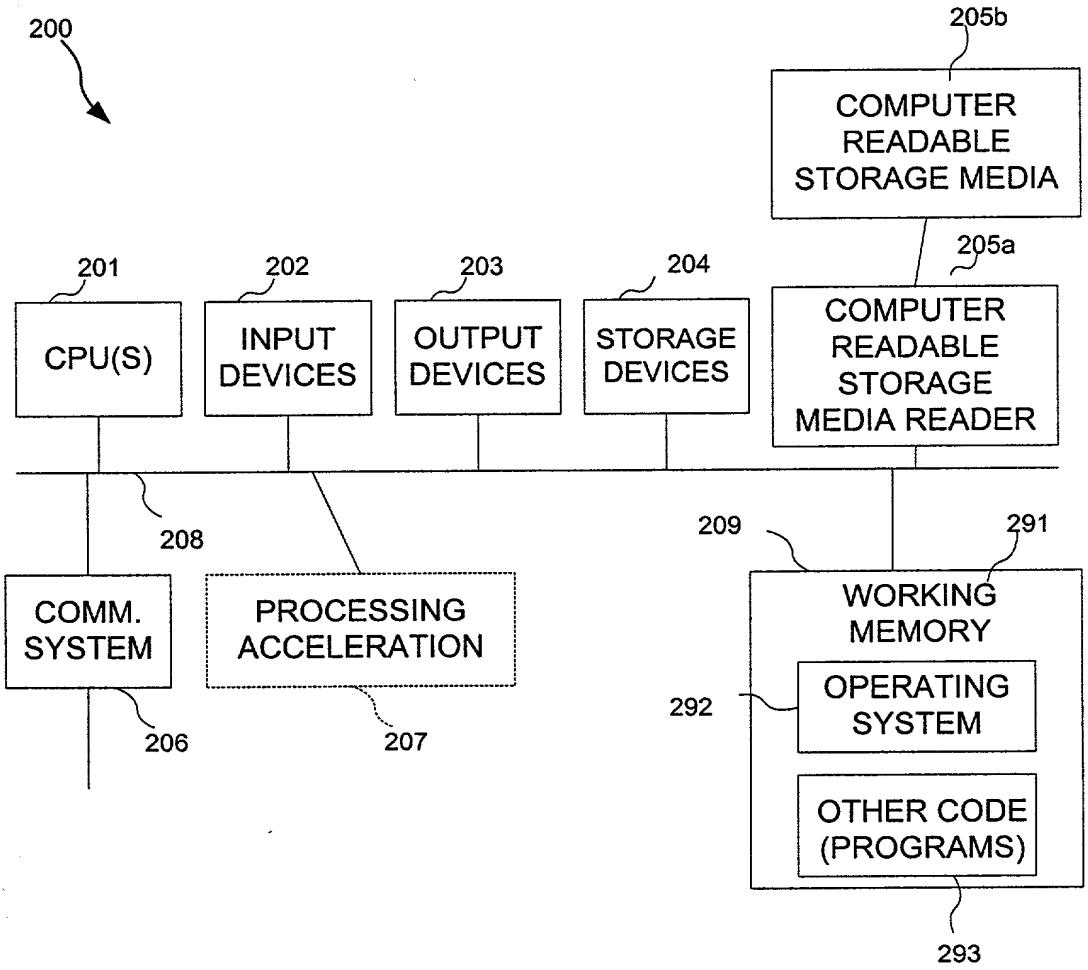
200
205b
COMPUTER READABLE STORAGE MEDIA
205a
COMPUTER READABLE STORAGE MEDIA READER
201
CPU(S)
202
INPUT DEVICES
203
OUTPUT DEVICES
204
STORAGE DEVICES
208
209
291
WORKING MEMORY
292
OPERATING SYSTEM
OTHER CODE (PROGRAMS)
293
COMM. SYSTEM
206
PROCESSING ACCELERATION
207

FIG. 2

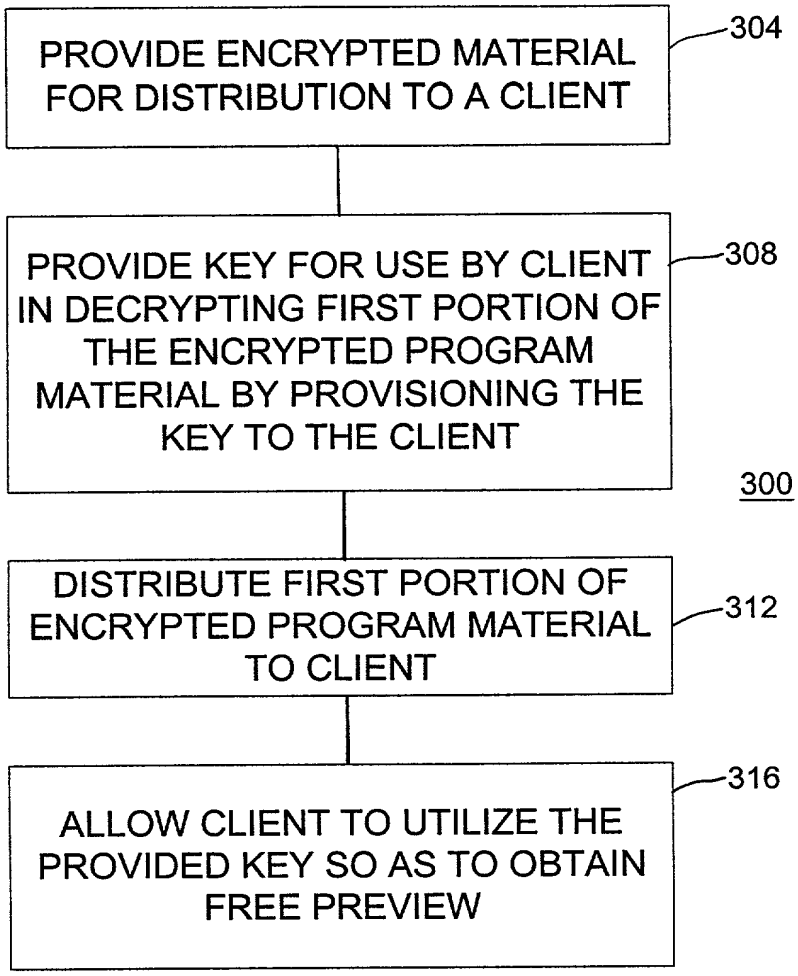
PROVIDE ENCRYPTED MATERIAL FOR DISTRIBUTION TO A CLIENT
304
PROVIDE KEY FOR USE BY CLIENT IN DECRYPTING FIRST PORTION OF THE ENCRYPTED PROGRAM MATERIAL BY PROVISIONING THE KEY TO THE CLIENT
308
300
DISTRIBUTE FIRST PORTION OF ENCRYPTED PROGRAM MATERIAL TO CLIENT
312
ALLOW CLIENT TO UTILIZE THE PROVIDED KEY SO AS TO OBTAIN FREE PREVIEW
316

FIG. 3

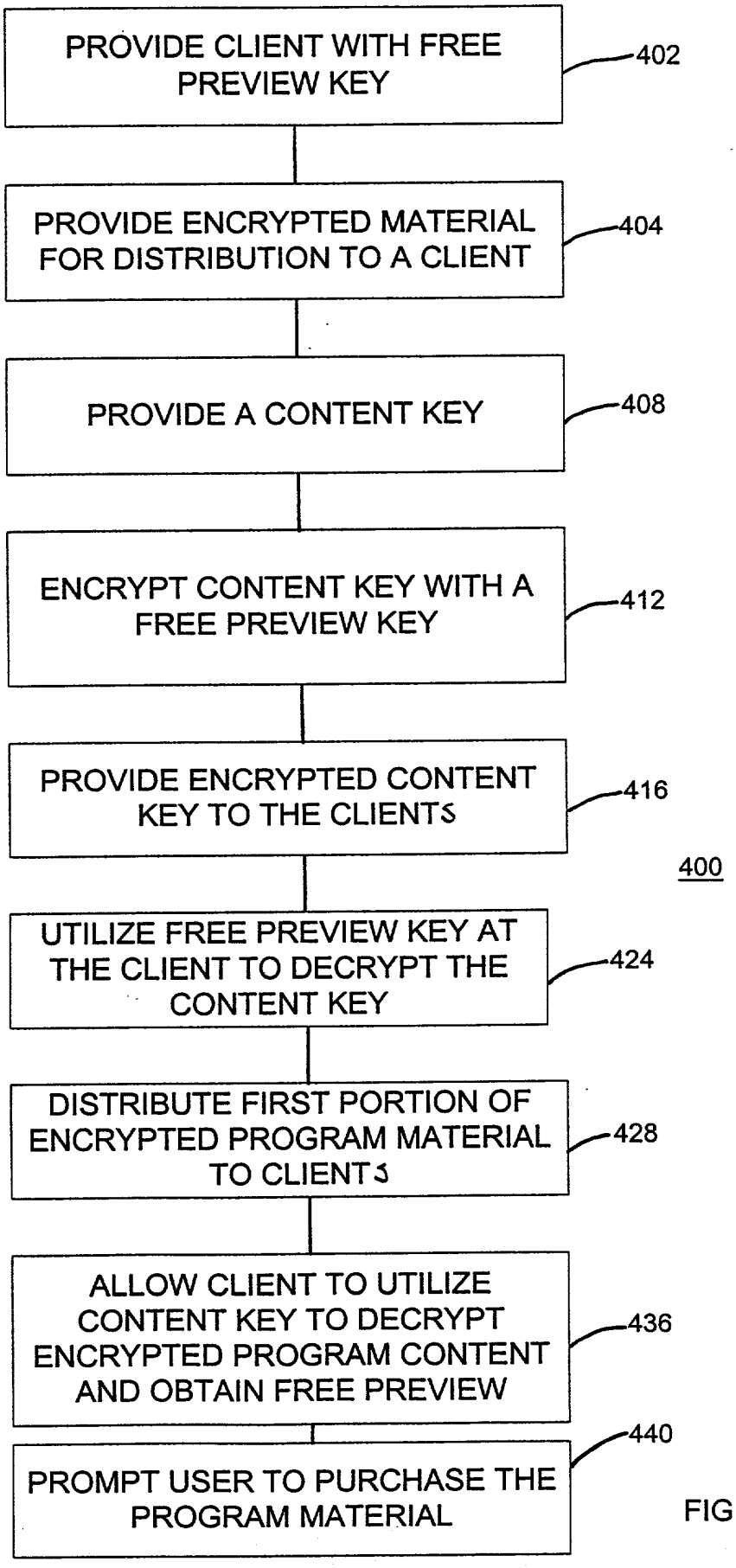
PROVIDE CLIENT WITH FREE PREVIEW KEY
402
PROVIDE ENCRYPTED MATERIAL FOR DISTRIBUTION TO A CLIENT
404
PROVIDE A CONTENT KEY
408
ENCRYPT CONTENT KEY WITH A FREE PREVIEW KEY
412
PROVIDE ENCRYPTED CONTENT KEY TO THE CLIENTS
416
400
UTILIZE FREE PREVIEW KEY AT THE CLIENT TO DECRYPT THE CONTENT KEY
424
DISTRIBUTE FIRST PORTION OF ENCRYPTED PROGRAM MATERIAL TO CLIENTS
428
ALLOW CLIENT TO UTILIZE CONTENT KEY TO DECRYPT ENCRYPTED PROGRAM CONTENT AND OBTAIN FREE PREVIEW
436
PROMPT USER TO PURCHASE THE PROGRAM MATERIAL
440

FIG. 4

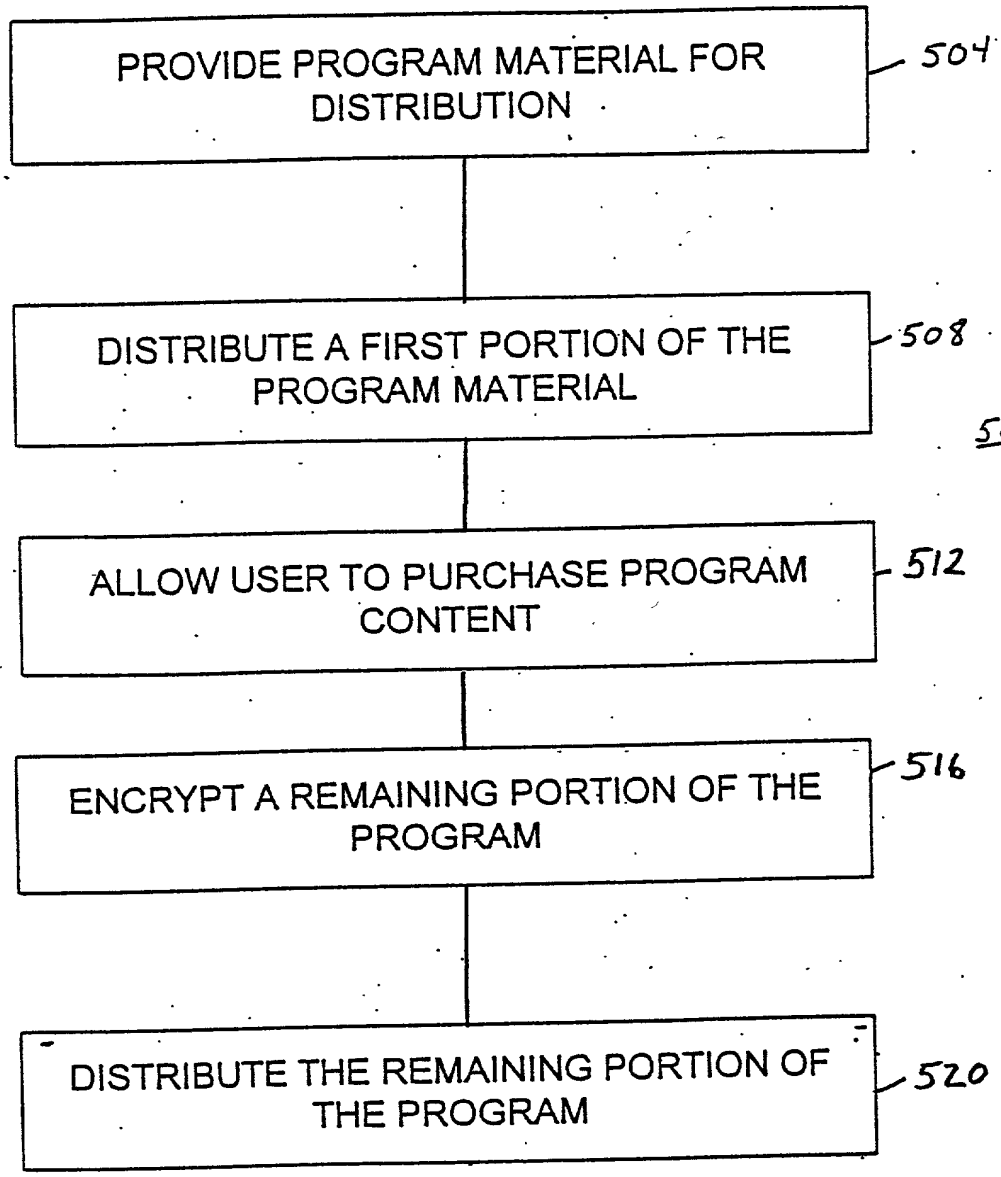
PROVIDE PROGRAM MATERIAL FOR DISTRIBUTION
504
DISTRIBUTE A FIRST PORTION OF THE PROGRAM MATERIAL
508
500
ALLOW USER TO PURCHASE PROGRAM CONTENT
512
ENCRYPT A REMAINING PORTION OF THE PROGRAM
516
DISTRIBUTE THE REMAINING PORTION OF THE PROGRAM
520

Fig. 5

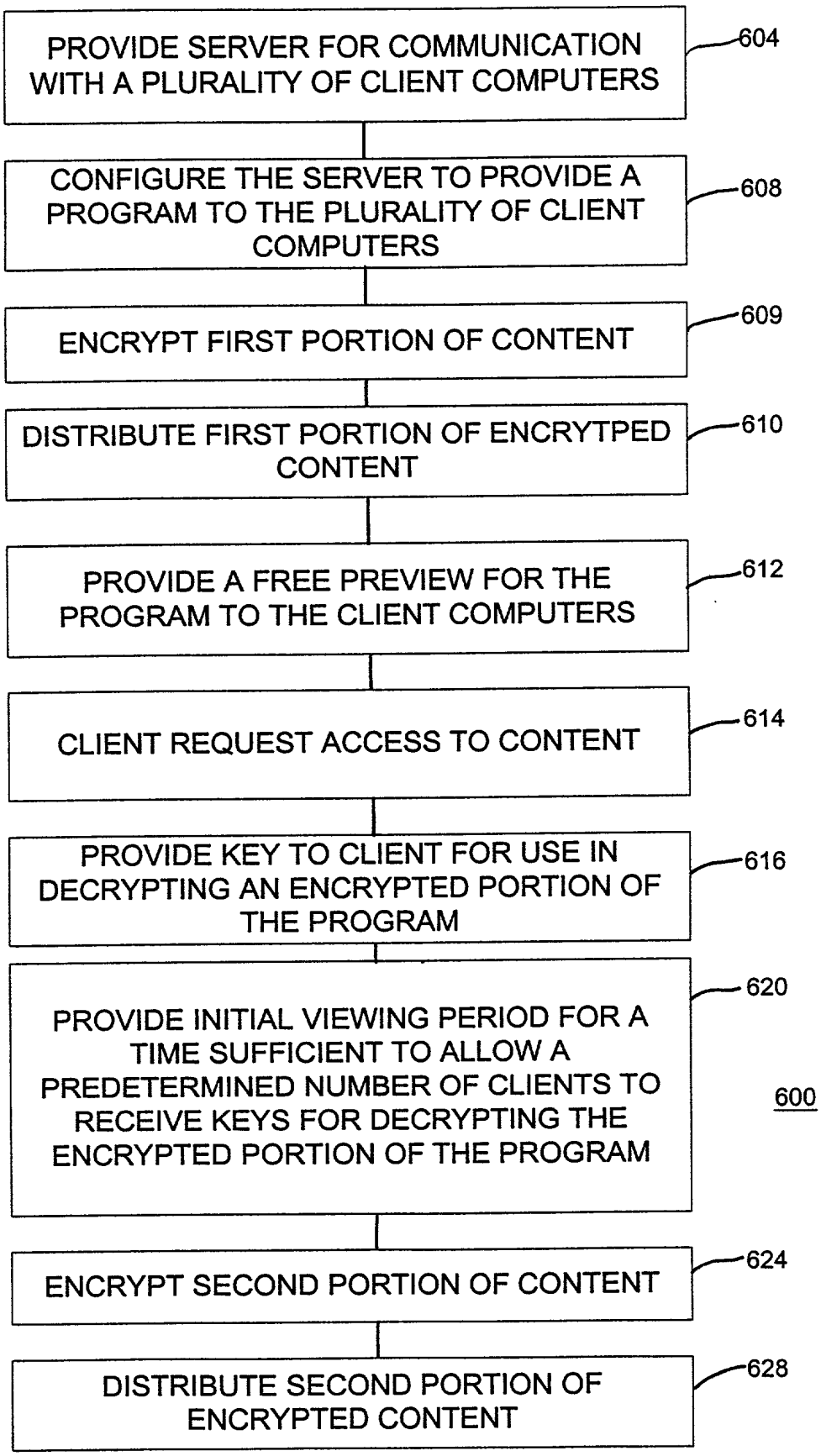
PROVIDE SERVER FOR COMMUNICATION WITH A PLURALITY OF CLIENT COMPUTERS
604
CONFIGURE THE SERVER TO PROVIDE A PROGRAM TO THE PLURALITY OF CLIENT COMPUTERS
608
ENCRYPT FIRST PORTION OF CONTENT
609
DISTRIBUTE FIRST PORTION OF ENCRYTPED CONTENT
610
PROVIDE A FREE PREVIEW FOR THE PROGRAM TO THE CLIENT COMPUTERS
612
CLIENT REQUEST ACCESS TO CONTENT
614
PROVIDE KEY TO CLIENT FOR USE IN DECRYPTING AN ENCRYPTED PORTION OF THE PROGRAM
616
PROVIDE INITIAL VIEWING PERIOD FOR A TIME SUFFICIENT TO ALLOW A PREDETERMINED NUMBER OF CLIENTS TO RECEIVE KEYS FOR DECRYPTING THE ENCRYPTED PORTION OF THE PROGRAM
620
600
ENCRYPT SECOND PORTION OF CONTENT
624
DISTRIBUTE SECOND PORTION OF ENCRYPTED CONTENT
628

FIG. 6

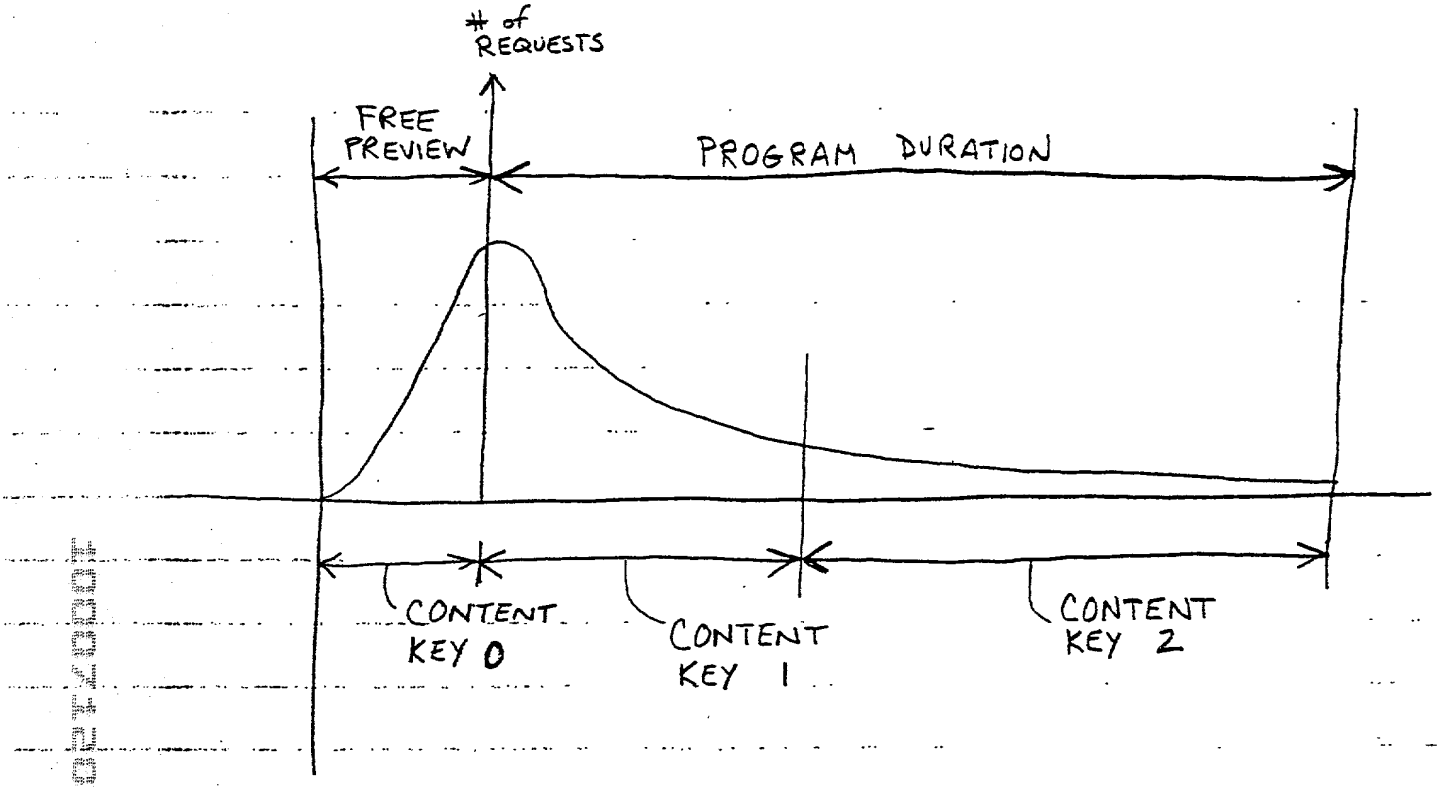
# of REQUESTS
FREE PREVIEW
PROGRAM DURATION
CONTENT KEY 0
CONTENT KEY 1
CONTENT KEY 2

Fig. 7A

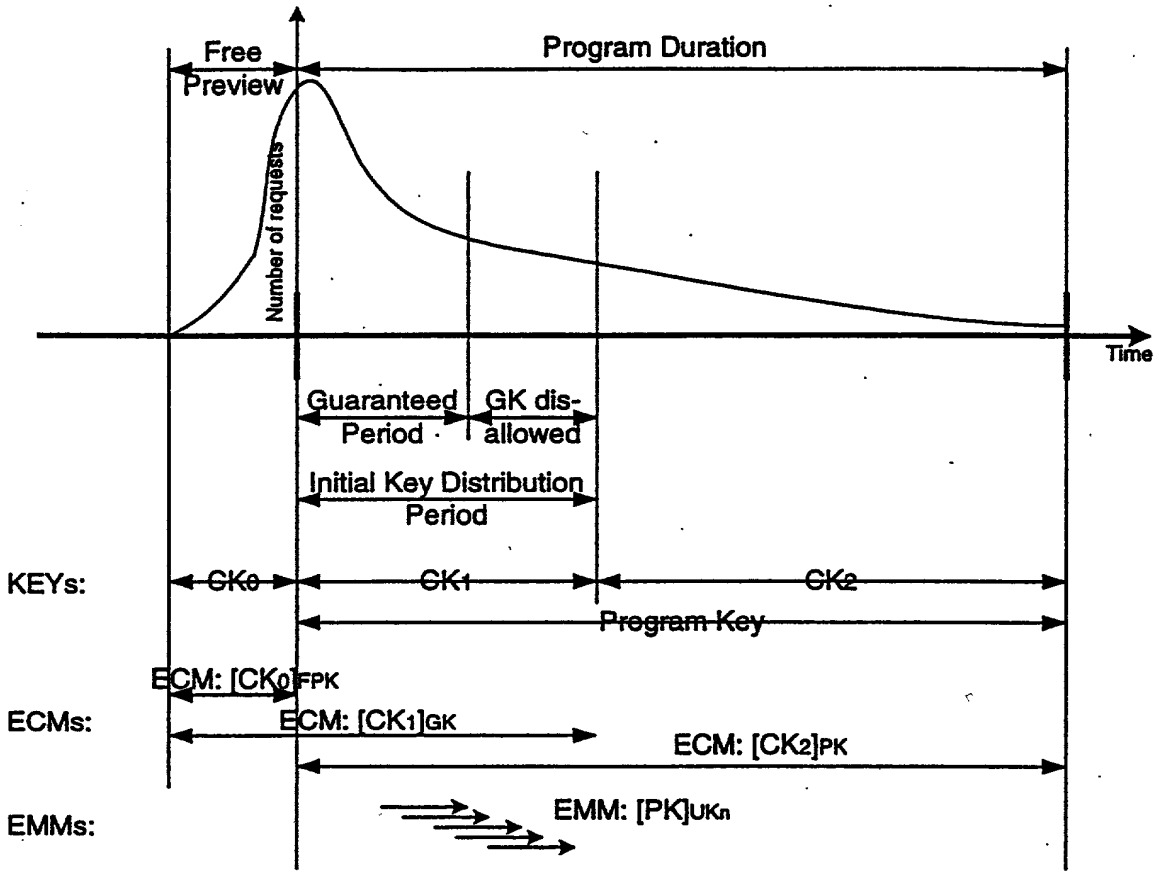
Free Preview
Program Duration
Number of requests
Time
Guaranteed Period
GK dis-allowed
Initial Key Distribution Period
KEYs:
CK0
CK1
CK2
Program Key
ECM: [CK0]FPK
ECMs:
ECM: [CK1]GK
ECM: [CK2]PK
EMMs:
EMM: [PK]UKn

Fig. 7B

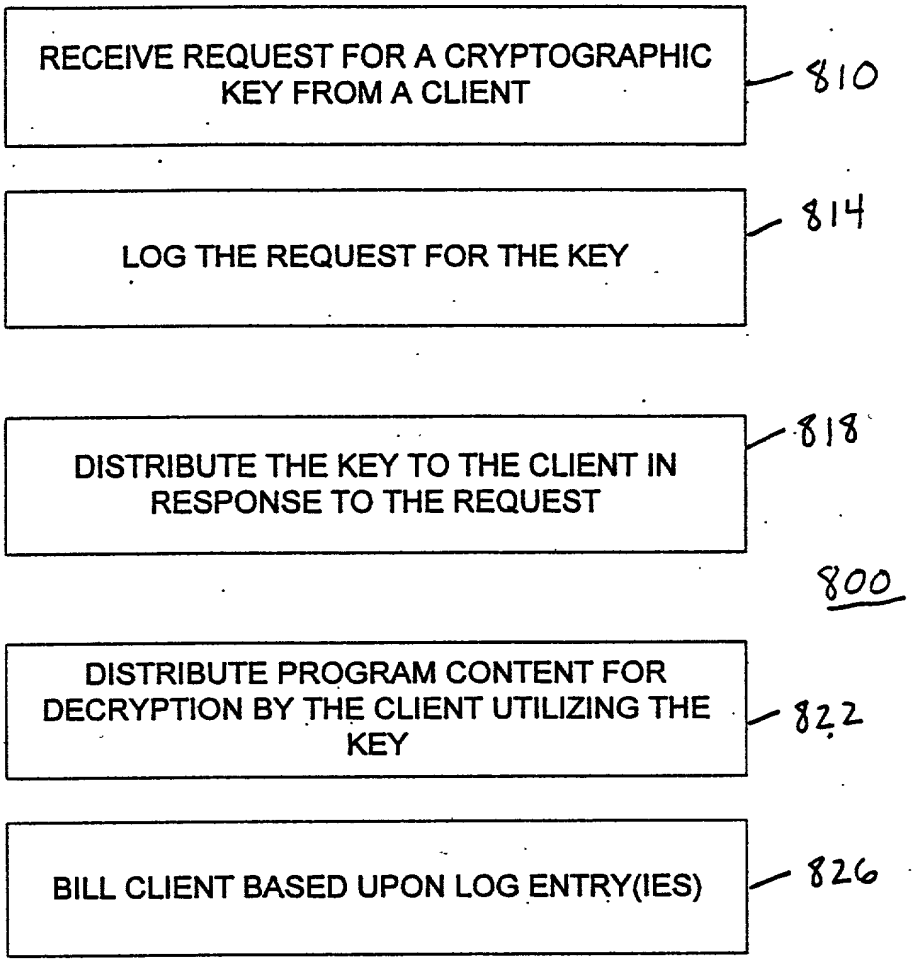
RECEIVE REQUEST FOR A CRYPTOGRAPHIC KEY FROM A CLIENT
810
LOG THE REQUEST FOR THE KEY
814
DISTRIBUTE THE KEY TO THE CLIENT IN RESPONSE TO THE REQUEST
818
800
DISTRIBUTE PROGRAM CONTENT FOR DECRYPTION BY THE CLIENT UTILIZING THE KEY
822
BILL CLIENT BASED UPON LOG ENTRY(IES)
826

Fig. 8

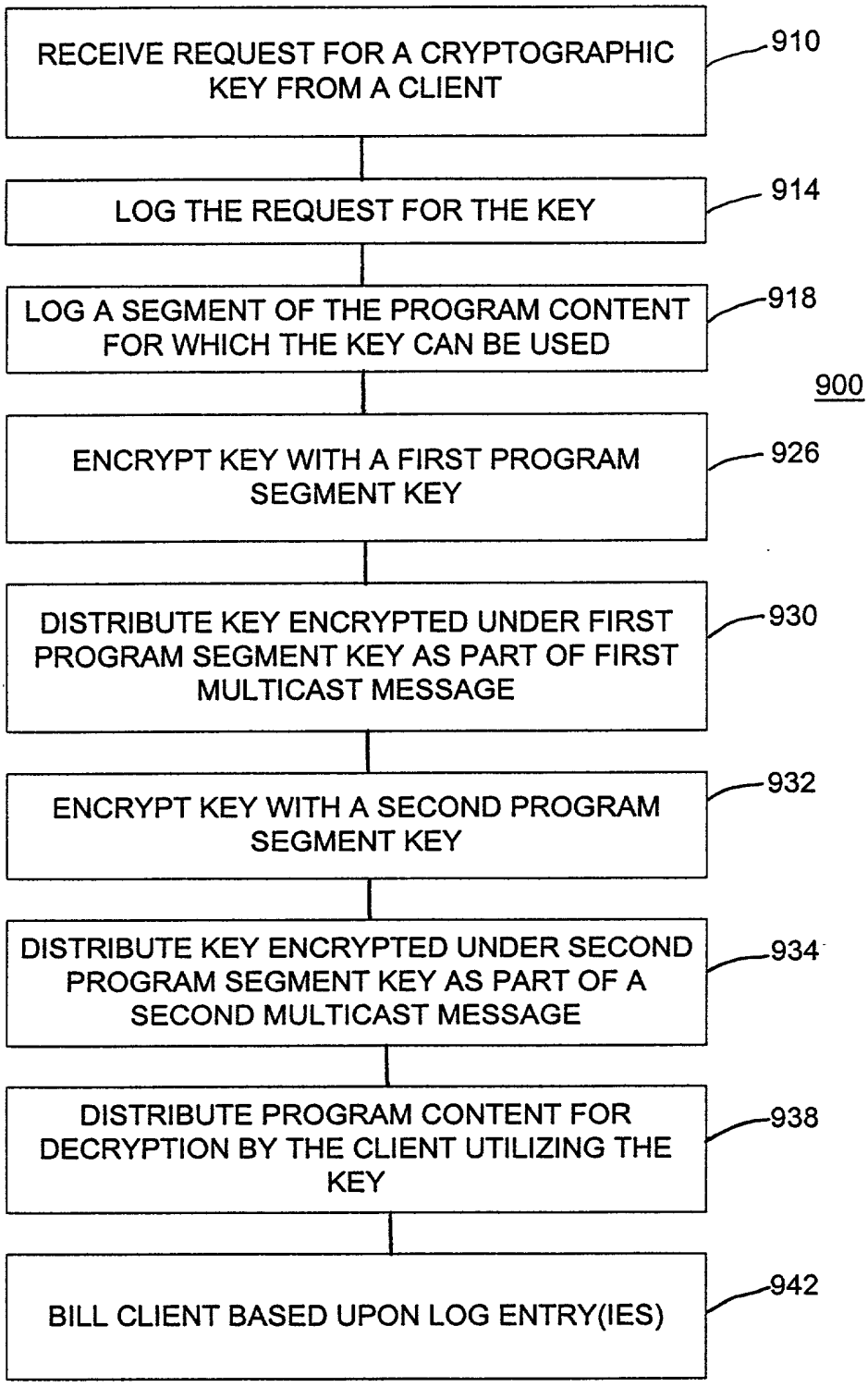
RECEIVE REQUEST FOR A CRYPTOGRAPHIC KEY FROM A CLIENT
910
LOG THE REQUEST FOR THE KEY
914
LOG A SEGMENT OF THE PROGRAM CONTENT FOR WHICH THE KEY CAN BE USED
918
900
ENCRYPT KEY WITH A FIRST PROGRAM SEGMENT KEY
926
DISTRIBUTE KEY ENCRYPTED UNDER FIRST PROGRAM SEGMENT KEY AS PART OF FIRST MULTICAST MESSAGE
930
ENCRYPT KEY WITH A SECOND PROGRAM SEGMENT KEY
932
DISTRIBUTE KEY ENCRYPTED UNDER SECOND PROGRAM SEGMENT KEY AS PART OF A SECOND MULTICAST MESSAGE
934
DISTRIBUTE PROGRAM CONTENT FOR DECRYPTION BY THE CLIENT UTILIZING THE KEY
938
BILL CLIENT BASED UPON LOG ENTRY(IES)
942

FIG. 9

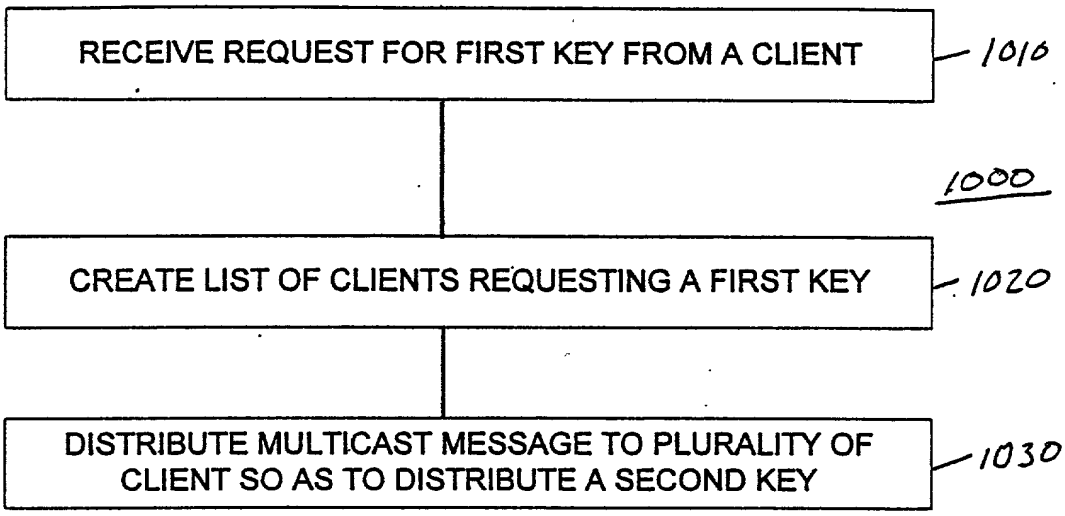

Fig. 10

Docket: 65P2000P

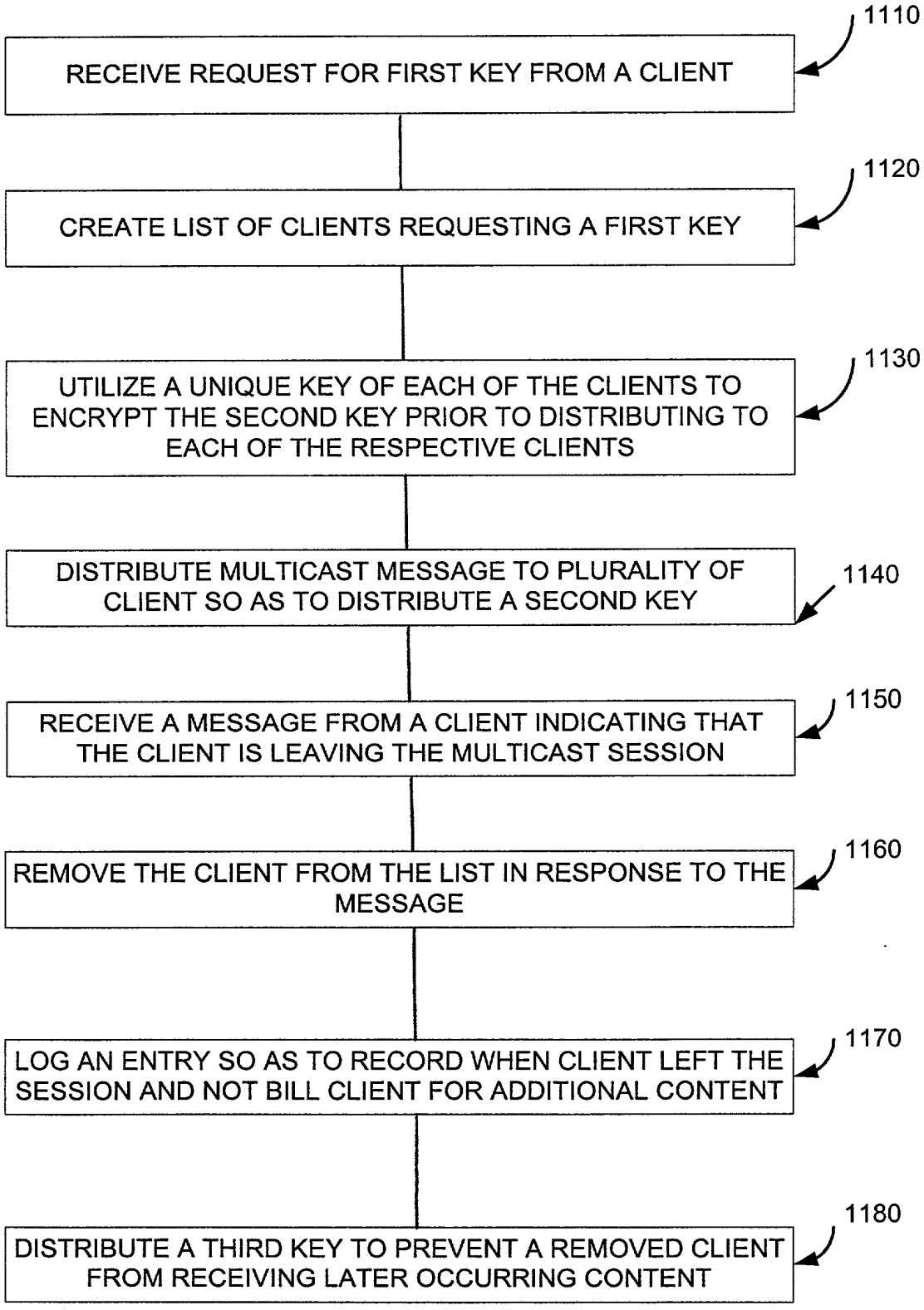
RECEIVE REQUEST FOR FIRST KEY FROM A CLIENT
1110
CREATE LIST OF CLIENTS REQUESTING A FIRST KEY
1120
UTILIZE A UNIQUE KEY OF EACH OF THE CLIENTS TO ENCRYPT THE SECOND KEY PRIOR TO DISTRIBUTING TO EACH OF THE RESPECTIVE CLIENTS
1130
DISTRIBUTE MULTICAST MESSAGE TO PLURALITY OF CLIENT SO AS TO DISTRIBUTE A SECOND KEY
1140
RECEIVE A MESSAGE FROM A CLIENT INDICATING THAT THE CLIENT IS LEAVING THE MULTICAST SESSION
1150
REMOVE THE CLIENT FROM THE LIST IN RESPONSE TO THE MESSAGE
1160
LOG AN ENTRY SO AS TO RECORD WHEN CLIENT LEFT THE SESSION AND NOT BILL CLIENT FOR ADDITIONAL CONTENT
1170
DISTRIBUTE A THIRD KEY TO PREVENT A REMOVED CLIENT FROM RECEIVING LATER OCCURRING CONTENT
1180

FIG. 11

1100

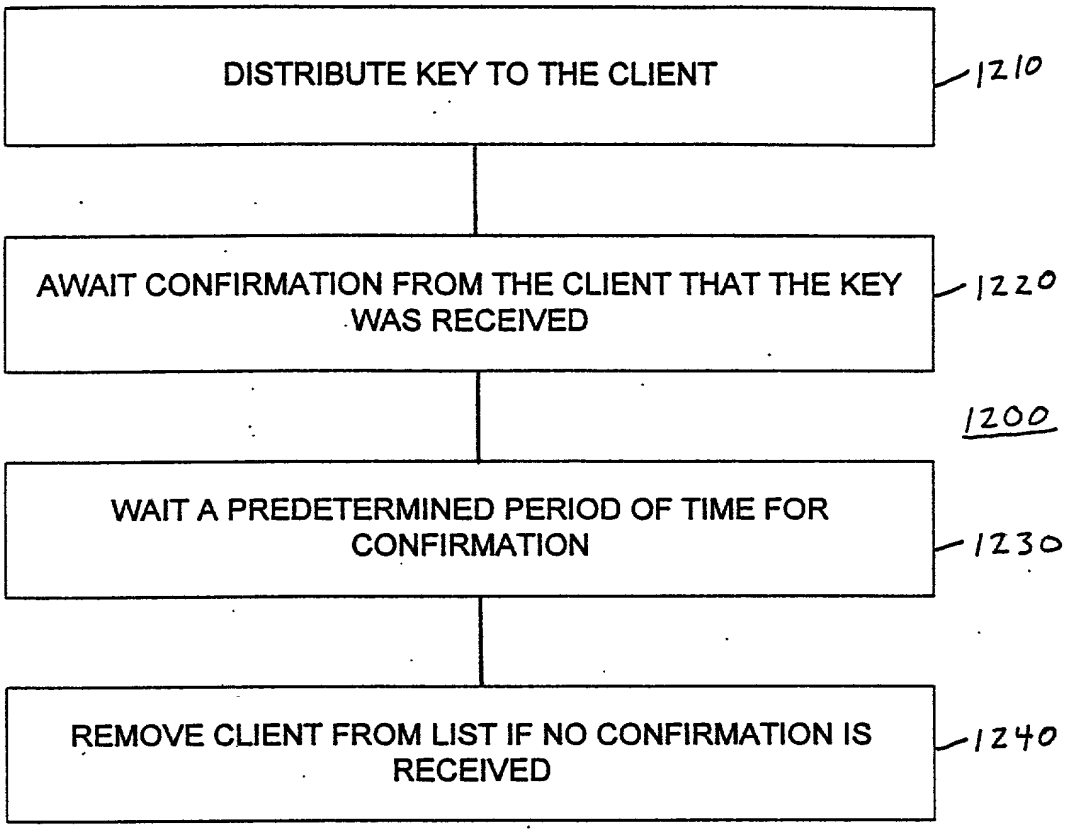
DISTRIBUTE KEY TO THE CLIENT
1210
AWAIT CONFIRMATION FROM THE CLIENT THAT THE KEY WAS RECEIVED
1220
1200
WAIT A PREDETERMINED PERIOD OF TIME FOR CONFIRMATION
1230
REMOVE CLIENT FROM LIST IF NO CONFIRMATION IS RECEIVED
1240

Fig. 12

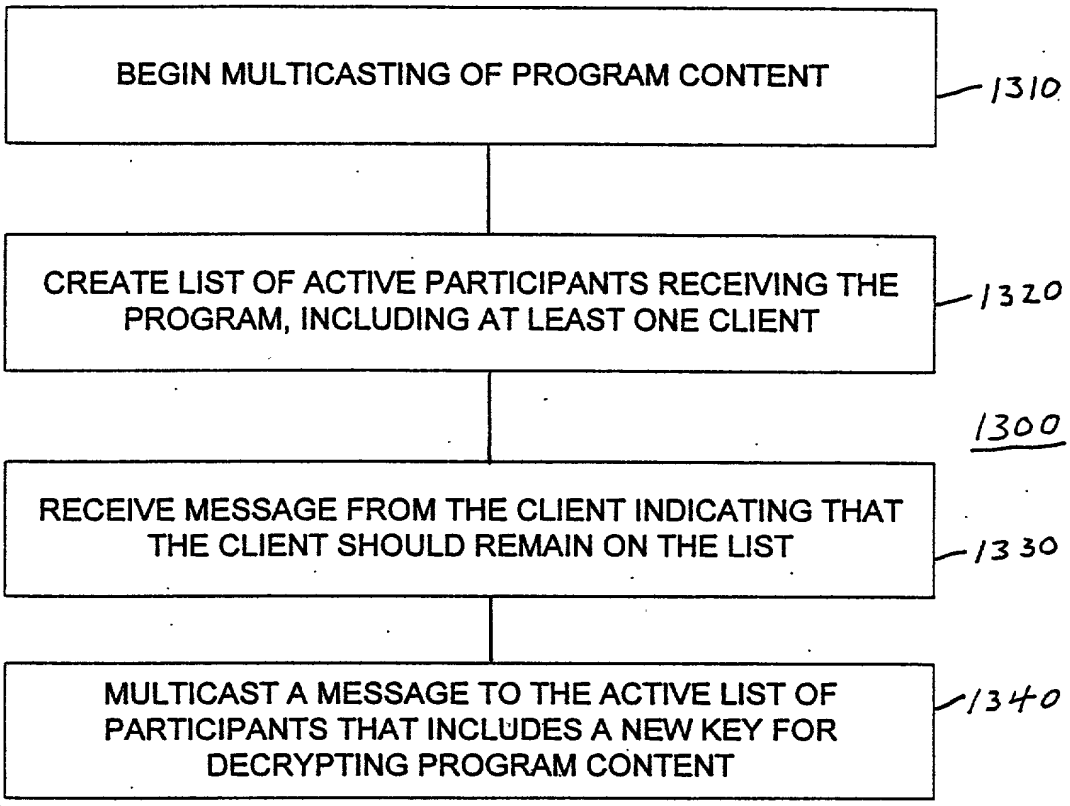
BEGIN MULTICASTING OF PROGRAM CONTENT
1310
CREATE LIST OF ACTIVE PARTICIPANTS RECEIVING THE PROGRAM, INCLUDING AT LEAST ONE CLIENT
1320
1300
RECEIVE MESSAGE FROM THE CLIENT INDICATING THAT THE CLIENT SHOULD REMAIN ON THE LIST
1330
MULTICAST A MESSAGE TO THE ACTIVE LIST OF PARTICIPANTS THAT INCLUDES A NEW KEY FOR DECRYPTING PROGRAM CONTENT
1340

Fig. 13

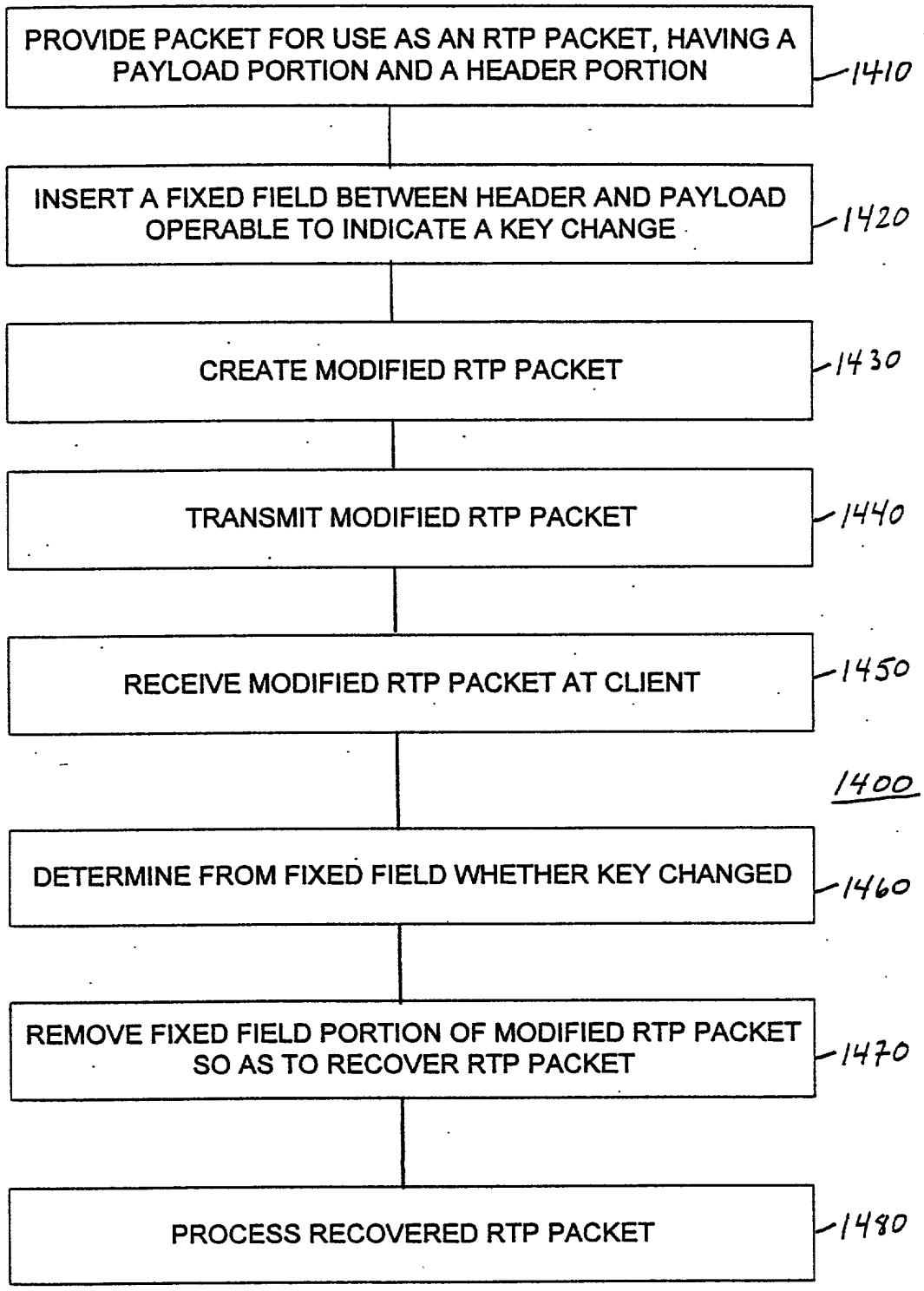
PROVIDE PACKET FOR USE AS AN RTP PACKET, HAVING A PAYLOAD PORTION AND A HEADER PORTION
1410
INSERT A FIXED FIELD BETWEEN HEADER AND PAYLOAD OPERABLE TO INDICATE A KEY CHANGE
1420
CREATE MODIFIED RTP PACKET
1430
TRANSMIT MODIFIED RTP PACKET
1440
RECEIVE MODIFIED RTP PACKET AT CLIENT
1450
1400
DETERMINE FROM FIXED FIELD WHETHER KEY CHANGED
1460
REMOVE FIXED FIELD PORTION OF MODIFIED RTP PACKET SO AS TO RECOVER RTP PACKET
1470
PROCESS RECOVERED RTP PACKET
1480

Fig. 14

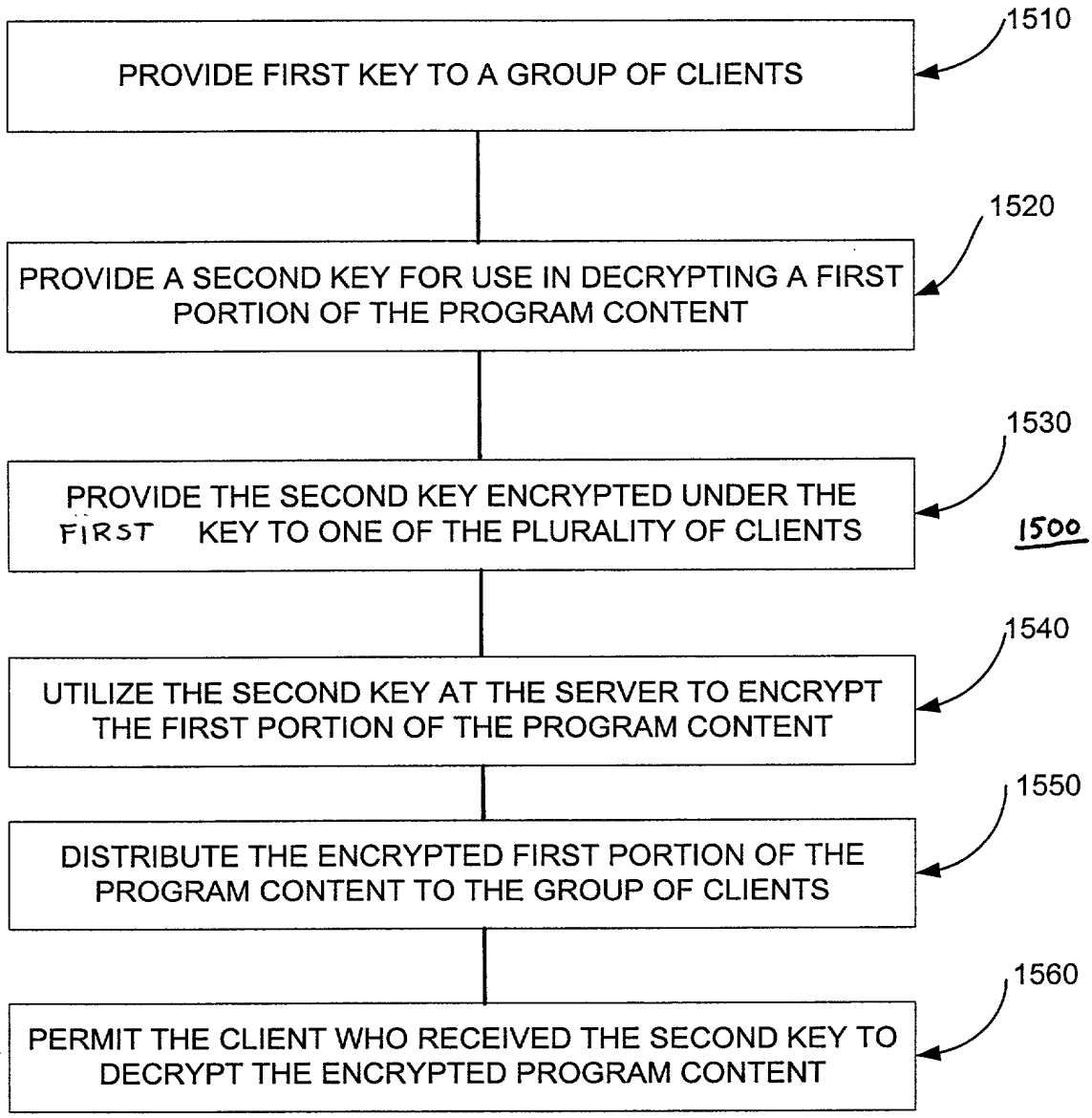
PROVIDE FIRST KEY TO A GROUP OF CLIENTS
1510
PROVIDE A SECOND KEY FOR USE IN DECRYPTING A FIRST PORTION OF THE PROGRAM CONTENT
1520
PROVIDE THE SECOND KEY ENCRYPTED UNDER THE FIRST KEY TO ONE OF THE PLURALITY OF CLIENTS
1530
1500
UTILIZE THE SECOND KEY AT THE SERVER TO ENCRYPT THE FIRST PORTION OF THE PROGRAM CONTENT
1540
DISTRIBUTE THE ENCRYPTED FIRST PORTION OF THE PROGRAM CONTENT TO THE GROUP OF CLIENTS
1550
PERMIT THE CLIENT WHO RECEIVED THE SECOND KEY TO DECRYPT THE ENCRYPTED PROGRAM CONTENT
1560

FIG. 15

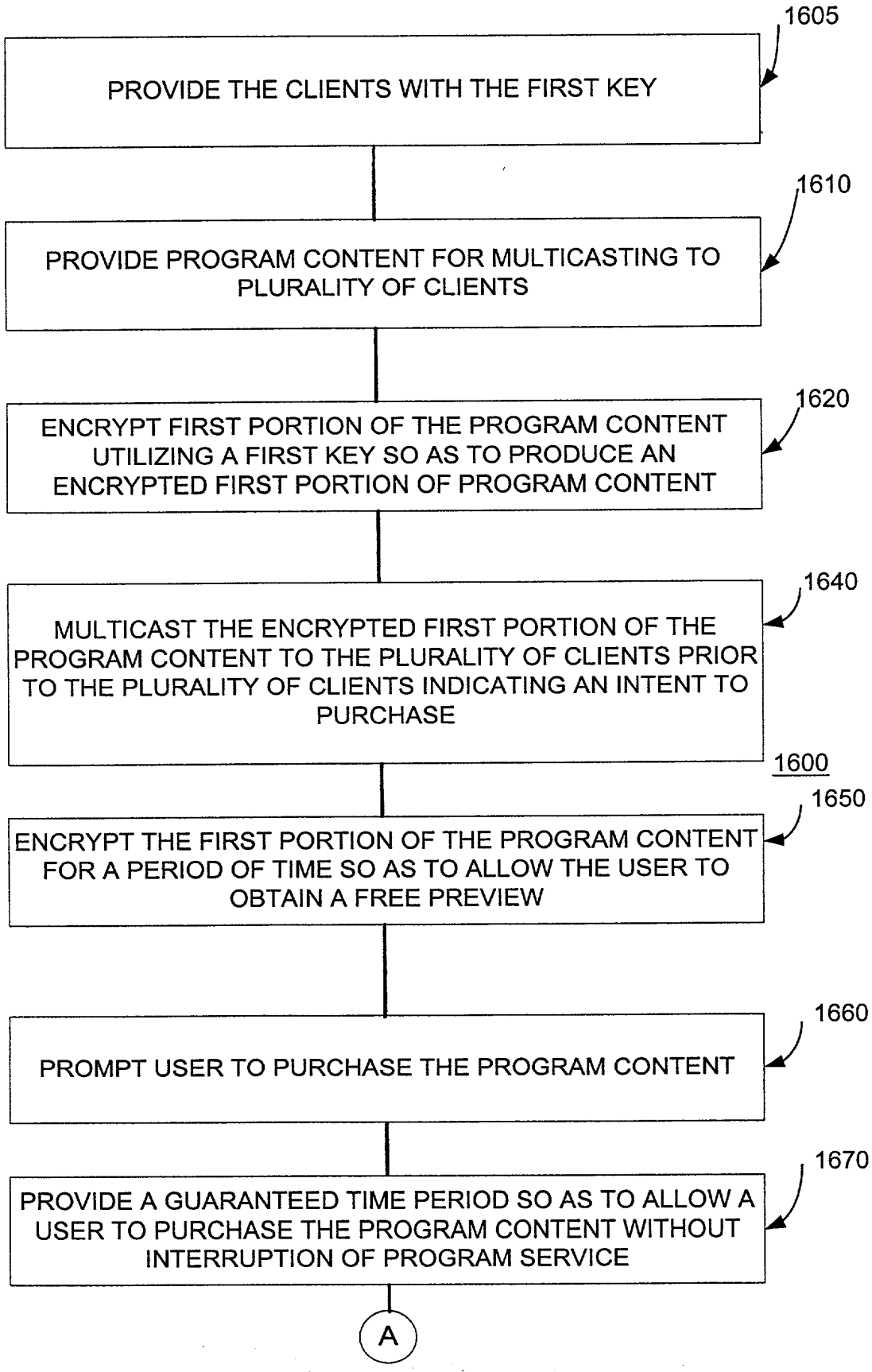
1605
PROVIDE THE CLIENTS WITH THE FIRST KEY
1610
PROVIDE PROGRAM CONTENT FOR MULTICASTING TO PLURALITY OF CLIENTS
1620
ENCRYPT FIRST PORTION OF THE PROGRAM CONTENT UTILIZING A FIRST KEY SO AS TO PRODUCE AN ENCRYPTED FIRST PORTION OF PROGRAM CONTENT
1640
MULTICAST THE ENCRYPTED FIRST PORTION OF THE PROGRAM CONTENT TO THE PLURALITY OF CLIENTS PRIOR TO THE PLURALITY OF CLIENTS INDICATING AN INTENT TO PURCHASE
1600
1650
ENCRYPT THE FIRST PORTION OF THE PROGRAM CONTENT FOR A PERIOD OF TIME SO AS TO ALLOW THE USER TO OBTAIN A FREE PREVIEW
1660
PROMPT USER TO PURCHASE THE PROGRAM CONTENT
1670
PROVIDE A GUARANTEED TIME PERIOD SO AS TO ALLOW A USER TO PURCHASE THE PROGRAM CONTENT WITHOUT INTERRUPTION OF PROGRAM SERVICE
A

FIG. 16A

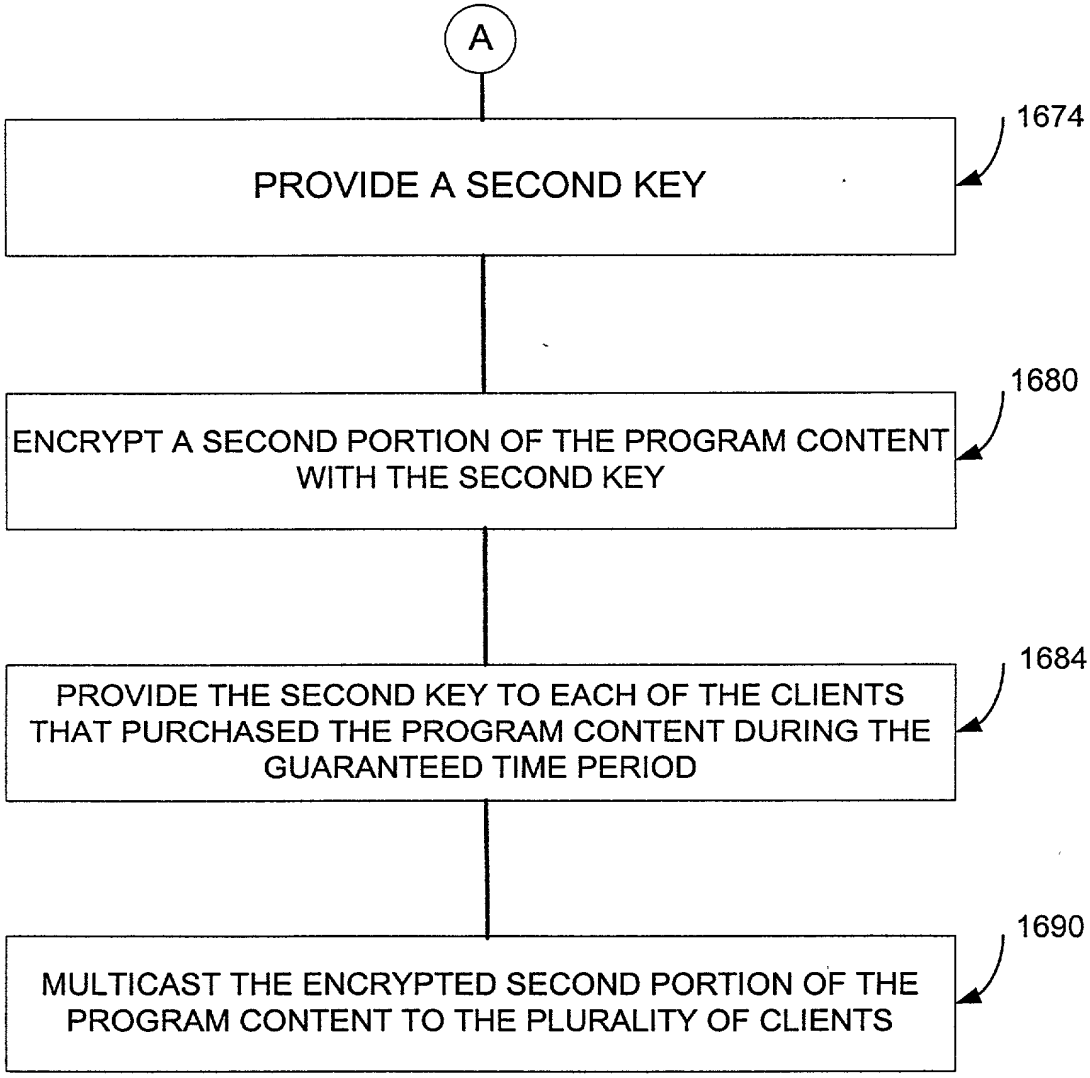
A
PROVIDE A SECOND KEY
1674
ENCRYPT A SECOND PORTION OF THE PROGRAM CONTENT WITH THE SECOND KEY
1680
PROVIDE THE SECOND KEY TO EACH OF THE CLIENTS THAT PURCHASED THE PROGRAM CONTENT DURING THE GUARANTEED TIME PERIOD
1684
MULTICAST THE ENCRYPTED SECOND PORTION OF THE PROGRAM CONTENT TO THE PLURALITY OF CLIENTS
1690

FIG. 16B

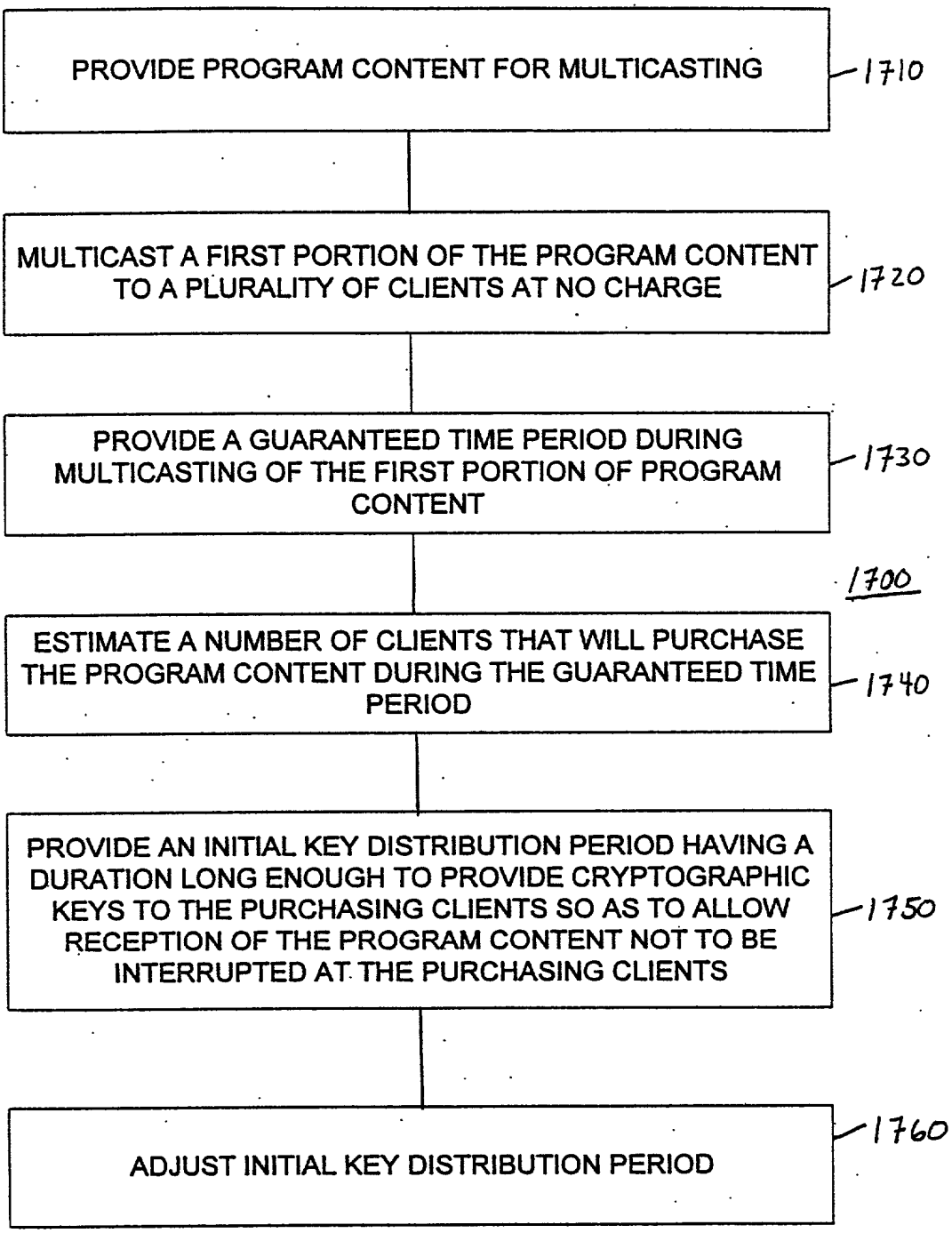
PROVIDE PROGRAM CONTENT FOR MULTICASTING
1710
MULTICAST A FIRST PORTION OF THE PROGRAM CONTENT TO A PLURALITY OF CLIENTS AT NO CHARGE
1720
PROVIDE A GUARANTEED TIME PERIOD DURING MULTICASTING OF THE FIRST PORTION OF PROGRAM CONTENT
1730
1700
ESTIMATE A NUMBER OF CLIENTS THAT WILL PURCHASE THE PROGRAM CONTENT DURING THE GUARANTEED TIME PERIOD
1740
PROVIDE AN INITIAL KEY DISTRIBUTION PERIOD HAVING A DURATION LONG ENOUGH TO PROVIDE CRYPTOGRAPHIC KEYS TO THE PURCHASING CLIENTS SO AS TO ALLOW RECEPTION OF THE PROGRAM CONTENT NOT TO BE INTERRUPTED AT THE PURCHASING CLIENTS
1750
ADJUST INITIAL KEY DISTRIBUTION PERIOD
1760

Fig. 17

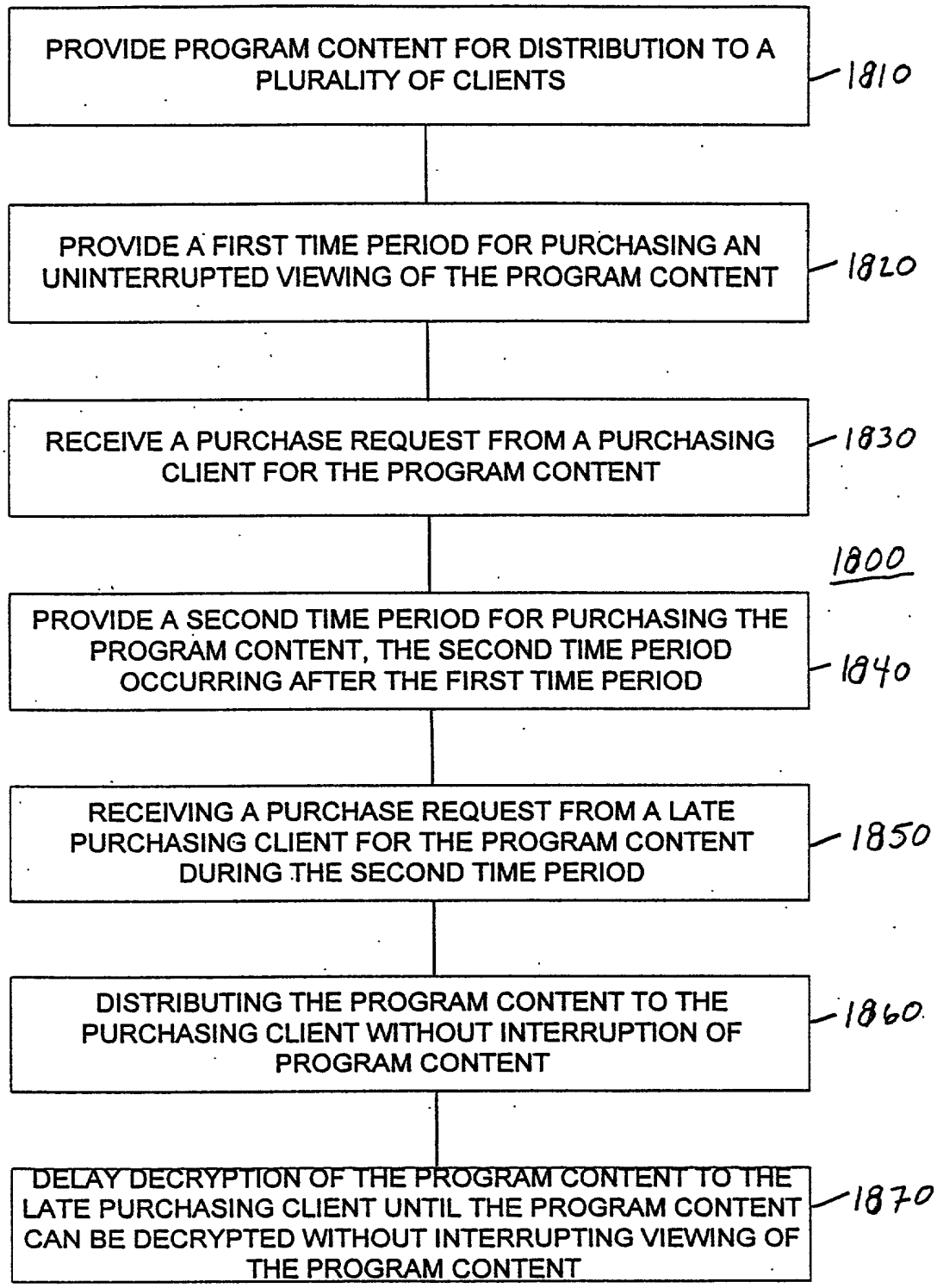
PROVIDE PROGRAM CONTENT FOR DISTRIBUTION TO A PLURALITY OF CLIENTS
1810
PROVIDE A FIRST TIME PERIOD FOR PURCHASING AN UNINTERRUPTED VIEWING OF THE PROGRAM CONTENT
1820
RECEIVE A PURCHASE REQUEST FROM A PURCHASING CLIENT FOR THE PROGRAM CONTENT
1830
1800
PROVIDE A SECOND TIME PERIOD FOR PURCHASING THE PROGRAM CONTENT, THE SECOND TIME PERIOD OCCURRING AFTER THE FIRST TIME PERIOD
1840
RECEIVING A PURCHASE REQUEST FROM A LATE PURCHASING CLIENT FOR THE PROGRAM CONTENT DURING THE SECOND TIME PERIOD
1850
DISTRIBUTING THE PROGRAM CONTENT TO THE PURCHASING CLIENT WITHOUT INTERRUPTION OF PROGRAM CONTENT
1860
DELAY DECRYPTION OF THE PROGRAM CONTENT TO THE LATE PURCHASING CLIENT UNTIL THE PROGRAM CONTENT CAN BE DECRYPTED WITHOUT INTERRUPTING VIEWING OF THE PROGRAM CONTENT
1870

Fig. 18

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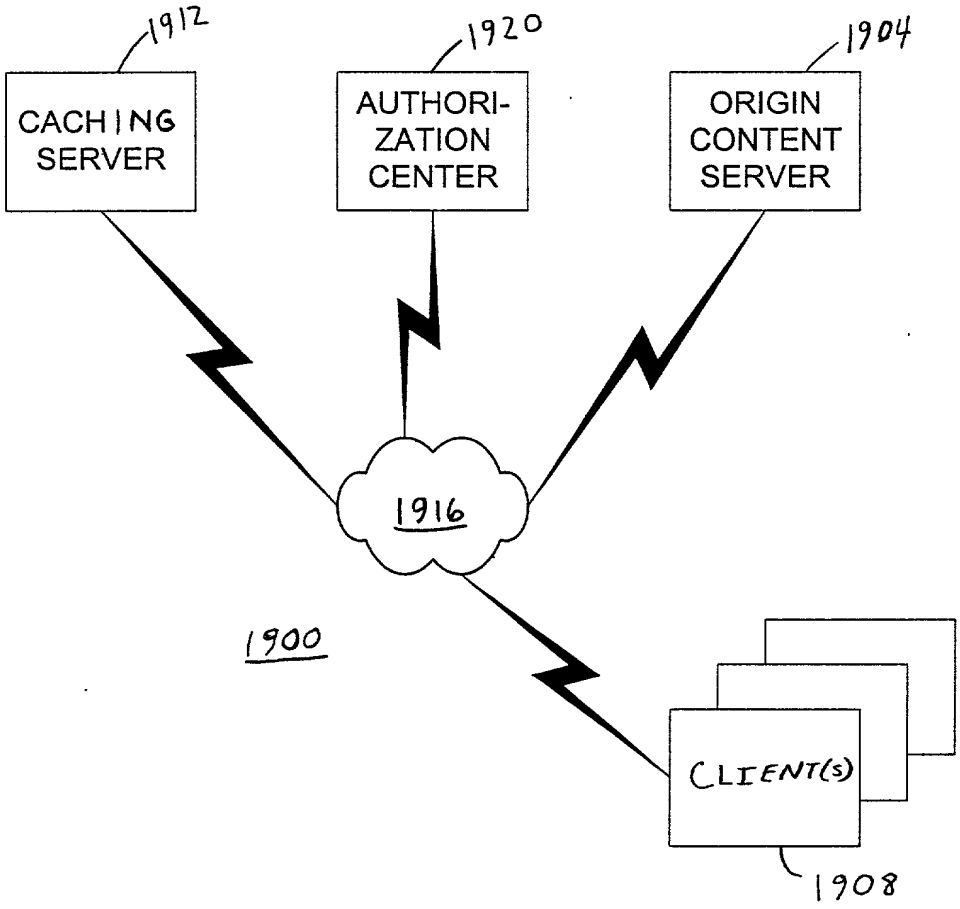

FIG. 19

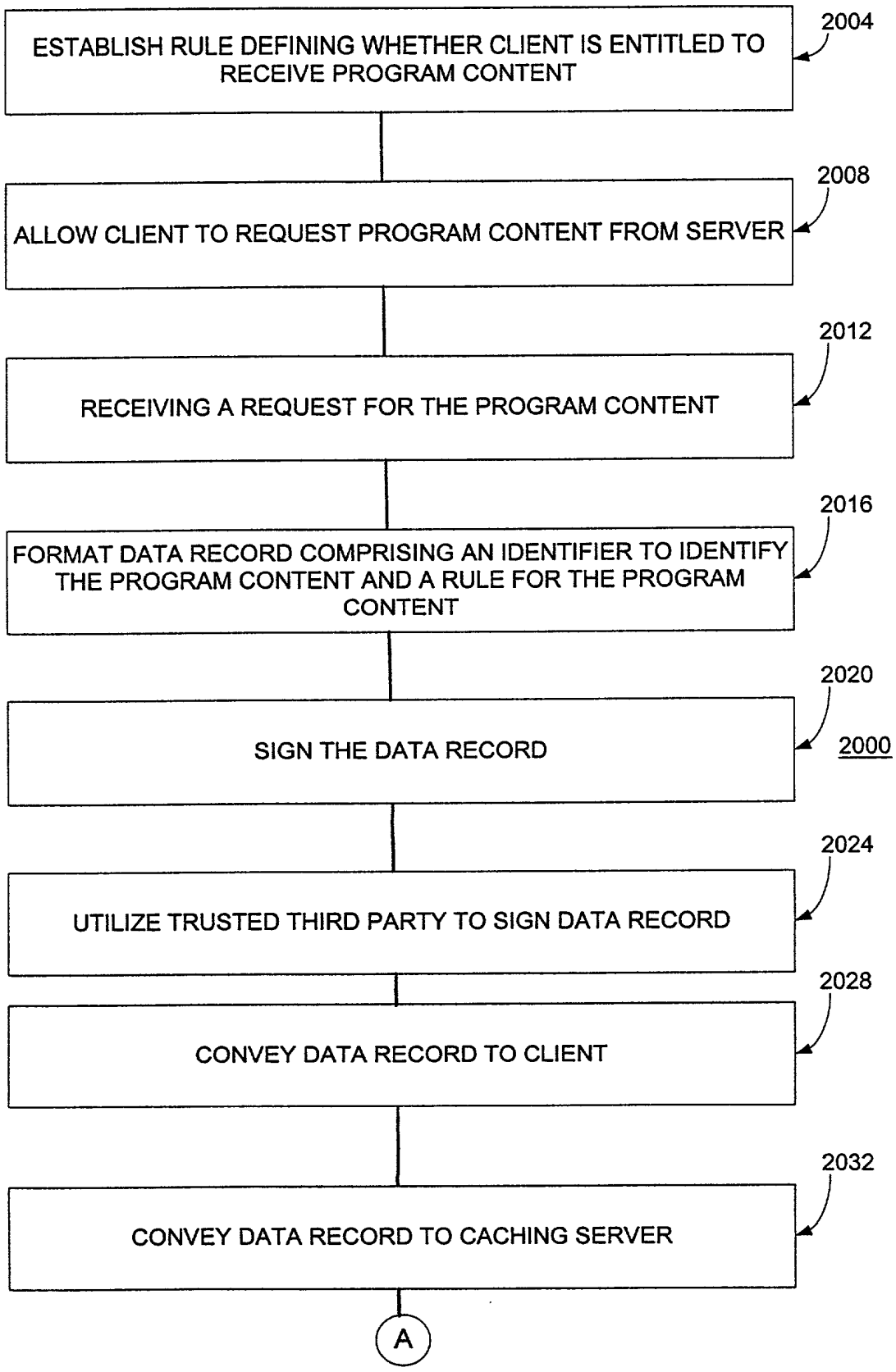
ESTABLISH RULE DEFINING WHETHER CLIENT IS ENTITLED TO RECEIVE PROGRAM CONTENT
2004
ALLOW CLIENT TO REQUEST PROGRAM CONTENT FROM SERVER
2008
RECEIVING A REQUEST FOR THE PROGRAM CONTENT
2012
FORMAT DATA RECORD COMPRISING AN IDENTIFIER TO IDENTIFY THE PROGRAM CONTENT AND A RULE FOR THE PROGRAM CONTENT
2016
SIGN THE DATA RECORD
2020
2000
UTILIZE TRUSTED THIRD PARTY TO SIGN DATA RECORD
2024
CONVEY DATA RECORD TO CLIENT
2028
CONVEY DATA RECORD TO CACHING SERVER
2032
A

FIG. 20A

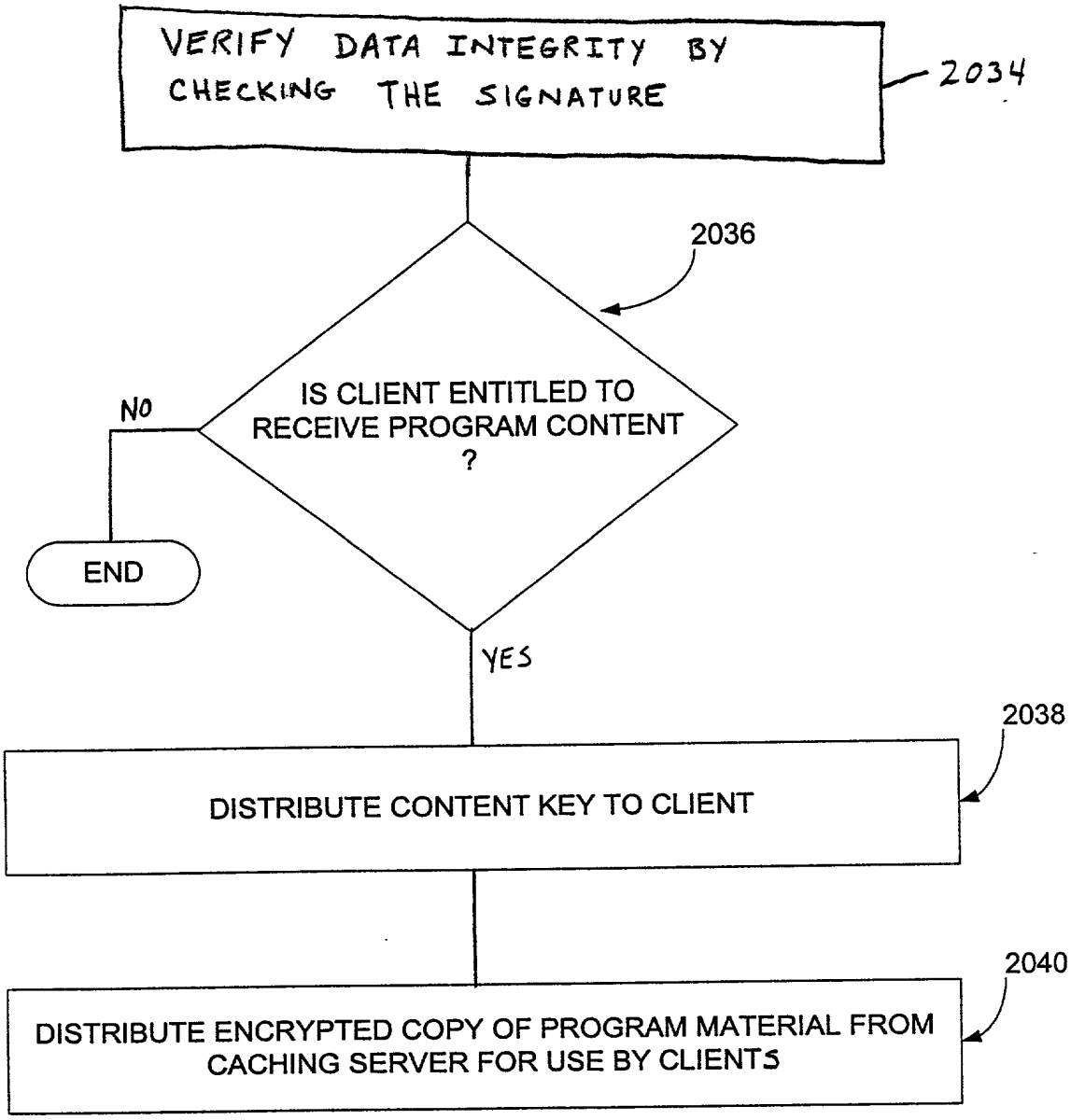
VERIFY DATA INTEGRITY BY CHECKING THE SIGNATURE
2034
2036
IS CLIENT ENTITLED TO RECEIVE PROGRAM CONTENT ?
NO
END
YES
2038
DISTRIBUTE CONTENT KEY TO CLIENT
2040
DISTRIBUTE ENCRYPTED COPY OF PROGRAM MATERIAL FROM CACHING SERVER FOR USE BY CLIENTS

FIG. 20B

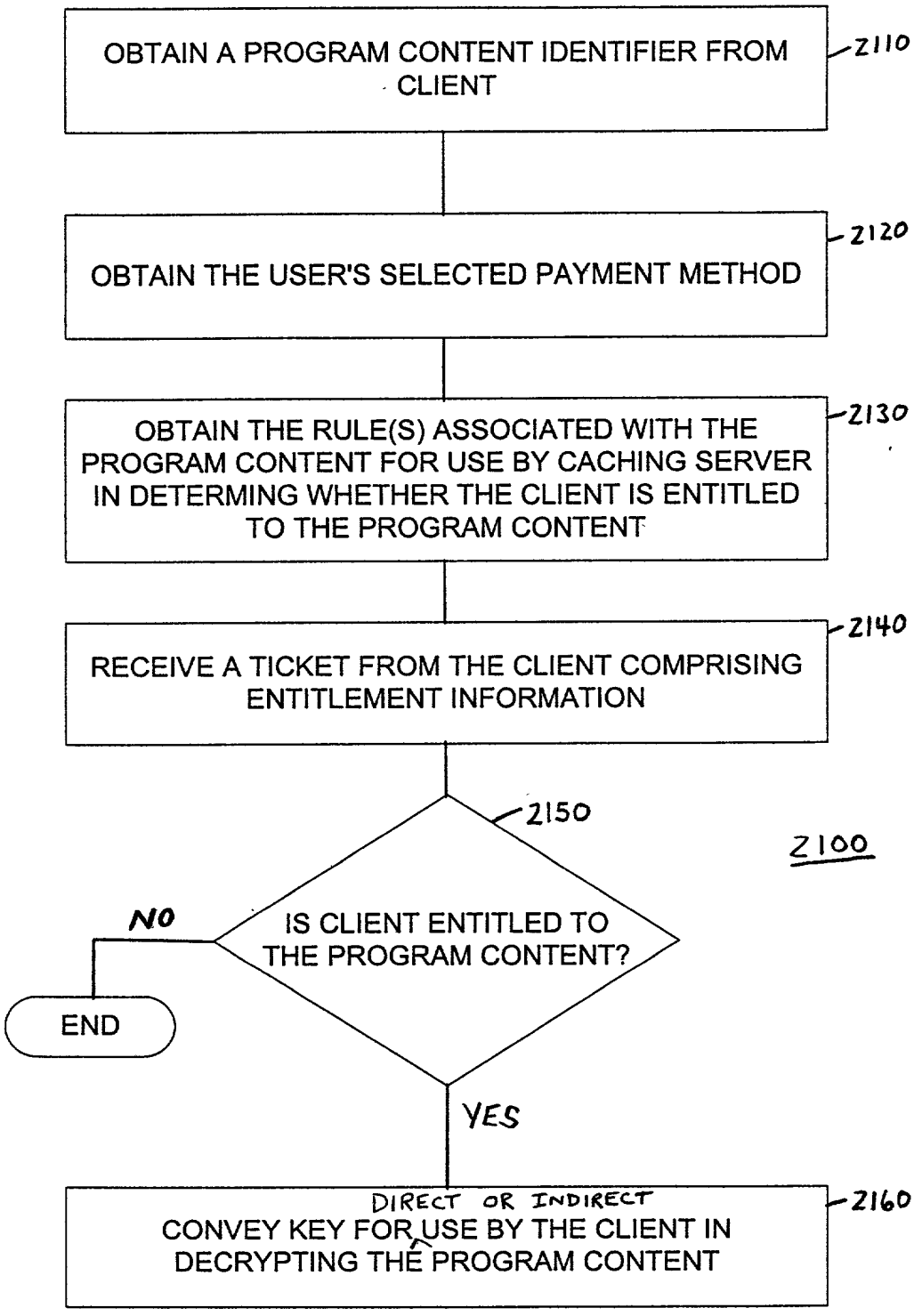
OBTAIN A PROGRAM CONTENT IDENTIFIER FROM CLIENT
2110
OBTAIN THE USER'S SELECTED PAYMENT METHOD
2120
OBTAIN THE RULE(S) ASSOCIATED WITH THE PROGRAM CONTENT FOR USE BY CACHING SERVER IN DETERMING WHETHER THE CLIENT IS ENTITLED TO THE PROGRAM CONTENT
2130
RECEIVE A TICKET FROM THE CLIENT COMPRISING ENTITLEMENT INFORMATION
2140
2150
2100
IS CLIENT ENTITLED TO THE PROGRAM CONTENT?
NO
END
YES
DIRECT OR INDIRECT
CONVEY KEY FOR USE BY THE CLIENT IN DECRYPTING THE PROGRAM CONTENT
2160

FIG. 21

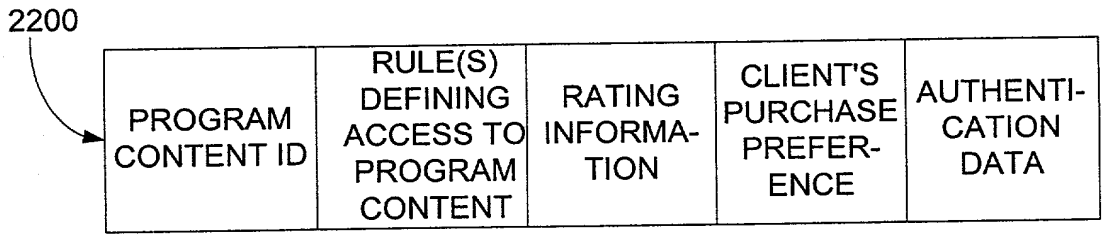

FIG. 22

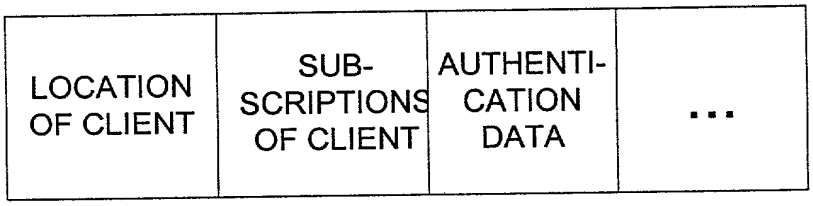

FIG. 23

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